

Application No: 10/525,908
Amendment B
Reply to Office Action Date 08/08/2007

Attorney Docket: 3883-024

IN THE DRAWINGS

The attached drawing sheet 3/13 replaces the original drawing sheet 3/13. The Japanese letters on the upper left corner of Fig. 4 has now been translated into English.

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REMARKS

Claims 1-8 are now pending in the application. Claim 1 has been amended.

Claims Rejections – 35 USC 103

Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugiyama et al. (US 2002/0181721 A1 – hereinafter "Sugiyama") in view of Prohs (US 4,496,022).

Claim 1 has been amended in an effort to even more clearly define the present invention.

The examiner has stated that the microphone cable installed in an inside of the baffle would have been an obvious choice for the purpose of safety (less tangling as the microphones of Sugiyama rotate) (see page 6, lines 10-12 of the final Office action). However, the Examiner's indication is not Applicants' intention in the present invention. The reason for the cables to be installed in an inside of the baffle is to suppress disturbances in the sound field around the baffle and to accurately pick up sound from the sound source (see, for example, paragraphs [0038] and [0054] - [0055] of the specification of the instant application). Claim 1 has been amended to clearly recite this prominent effect and the composition to realize the effect. This effect and composition are not disclosed or suggested by Sugiyama.

In view of the Examiner's statement on page 8, lines 5-7 of the Office action that the argued various effects, which the cited references do not have, are not claimed, the argued various effects and the compositions to obtain the various effects are now incorporated into claim 1. Applicants will explain below in the order corresponding to the previous remarks (see items 1) -6) in the table on page 8 of the response filed on 05/17/2007). The following underlines show the amended parts in the present amendment:

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1) *A plurality of sound source searching on the same frequency simultaneously.*

The present invention comprises a plurality of microphones arranged for picking up sound in all directions (amended claim 1, lines 3-4); and the arithmetic-processing apparatus, by arithmetic processing, finds the amplitude characteristics and phase characteristics of each of the acoustic signals picked up by a plurality of microphones, after which it combines that signal information with analysis information for the sound field around the baffle, and together with performing arithmetic processing to emphasize the sound coming from a specific direction for all directions, and identifying the direction from which the sound comes (amended claim 1, lines 12-15).

In addition, by adding the distance to the sound source to the conventional frequency domain beam forming method (amended claim 1, line 28-29), it estimates the intensity of the sound from the sound source or sound sources generated at one or more of sites on boundary surfaces (amended claim 1, lines 30-31) in all directions, so regardless of whether or not the space is small (see [0052]), based on the arithmetic-processing results and the distance input from the input apparatus at the same time (see [0052]). Thus, to search the same frequency simultaneously and the sound sources by frequency band specification becomes possible.

Especially, by entering "the distance from the sound source or sound sources generated at one or more of sites on boundary surfaces" from input apparatus (see [0049]), it is possible to estimate the intensity of the sound not only from the prominent simple point sound source but also from a plurality of sound sources. Moreover, the detailed analysis about the delay sounds (reflection) in which a direction differs from the components of the direct sound from a reflective surface can also be performed (see [0048] - [0050]).

In Sugiyama's invention, they analyze only the direction from which the sound from the sound source comes, and estimate the position of sound source as a "simple" point on coordinate axis by combining the information of sound direction. By using the method, a plurality of

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"simple point sound source" can be certainly detected. However, the simple sound source is rarely prominent in actual noise measurement, for example, road traffic noises, train noises, or the like is necessary to consider as a linear sound source. Furthermore, even if a simple point sound source is only one, there are many delay sounds via reflection surface such as ground surface or wall surface. Thus, Sugiyama's invention to identify a simple sound source cannot be used easily to identify a plurality of sound sources.

As regards the problem, in the present invention, by entering beforehand the distance to the position of a plurality of sound sources, the sound sources are searched so that a searchlight may be illuminated to the circumference centering on the sphere shaped baffle, then the sound intensity can be estimated not only from the prominent simple point sound source but also from a plurality of sound sources, and also the detailed analysis can be performed about the delay sound (reflection) in which a direction differs from the components of the direct sound from a reflective surface.

2) The contour indication of sound sources searching result.

Fig. 4 of the present invention illustrates an example of the sound intensity distribution shown on the first display apparatus. After analyzing the direction from which the sound from the sound source comes and estimating the intensity of the sound from the sound source by arithmetic processing by the arithmetic-processing apparatus, the results of the arithmetic process are displayed as a contour display in color (see Fig. 4) by the display apparatus as the sound-intensity distribution (see [0050] - [0051] and Fig. 4). With regard to "contour display", since "4 π contour" is mentioned in Japanese language in Fig. 4 on upper left, Applicants consider that "contour display" is not a new matter. This is the mistranslation from Japanese when Applicants submitted the English translation.

In Sugiyama's invention, changing the color of a symbol for the location of a sound source is shown (displayed as "circle" in Figs. 6 and 9 in Sugiyama). Therefore, the contour
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display of the intensity distribution of the sound from the sound source by identification of the direction from which the sounds from the sound sources come and estimation of the intensity of the sound from the sound sources as described in the present invention is not indicated and not suggested in Sugiyama.

3) Estimation of the sound power of sound sources.

As described in section 1), the distance to the sound source or sound sources generated at a plurality of sites on boundary surfaces (see [0049]) input before starting the sound source search (see [0049]), and the sound sources are searched so that a searchlight may be illuminated to the circumference centering on the sphere shaped baffle, by adding the distance to the sound source to the conventional frequency domain beam forming method (see [0049]), it can estimate accurately (see [0048]) the intensity of the sound from a plurality of sound sources (see [0048] - [0050]).

In Sugiyama, there is no indication or suggestion about inputting the distance to a plurality of sound sources beforehand and estimating the sound sources. Therefore, estimation of the intensity of the sound from the sound source or sound sources generated at one or more of sites on boundary surfaces in all direction in the present invention is apparently superior to that in Sugiyama's invention.

4) The contour indication of the sound power.

Refer to section 2).

5) Searching of the sound sources by frequency band specification.

Refer to section 1).

6) Extraction of the sounds according to direction.

Refer to section 3).

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Applicants believe that the other reasons for rejection are also overcome by the above mentioned amendments.

According to the Examiner's comment about an input apparatus taught by Sugiyama (See page 7, lines 15-19 of the final Office action), Applicants have amended as "said distance to the sound source, or sound sources generated at a plurality of sites on boundary surfaces input beforehand from said input apparatus" for clarification of the differences between the present invention and Sugiyama's invention.

Claim 1 has also been amended to overcome other rejections.

Claim 1 is, therefore, believed to be patentable over the art and dependent claims 2-3 are believed to be patentable as well due to their dependency on independent claim 1.

Allowable Subject Matter

Claims 4-8 are objected to as being dependent upon a rejected base claim, but would be allowable if written in independent form including all of the limitations of the base claim and any intervening claims.

Since claim 1 is believed to be patentable as discussed above and claims 4-8 are ultimately dependent on claim 1, they are believed to be patentable in dependent form.

During a telephone interview, the Examiner has indicated that the amendment should overcome the cited prior art. However, the Examiner has stated that a new search may be required for the added limitations. Applicants submit herewith a Request for Continued Examination in order to facilitate the prosecution of the instant application.

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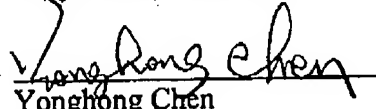
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Favorable consideration and early issuance of the Notice of Allowance are respectfully requested. Should further issues remain prior to allowance, the Examiner is respectfully requested to contact the undersigned at the indicated telephone number.

The Commissioner is hereby authorized to charge any fees which may be required at any time during the prosecution of this application without specific authorization, or credit any overpayment, to Deposit Account Number 50-0951.

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Respectfully submitted,



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